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A computer system



A computer system is a complete, basic and functional computer. It requires all the hardware and software to make it function.

We have already learnt about the functions of different parts of a computer. Now, we are going to learn about the hardware and software of a computer.

Hardware

Hardware refers to the physical parts of the computer that can be seen and touched. For example, the monitor, keyboard, mouse, speakers and every tiny nut and screw inside the computer forms the hardware. The input devices form the hardware of the computer.

Input devices

The input devices help us to feed data into a computer. Input devices are keyboard, mouse and joystick. Webcam and scanner are other input devices that are frequently used nowadays.

Webcam

A webcam (short form of web camera), is a digital camera connected to a computer. It captures pictures and videos.

Nowadays, many desktop computer screens and laptops come with a built-in camera.



Webcam



Scanner

A scanner is a device that captures and scans printed text or photograph into digital form in a computer.

The scanned images can be stored in a computer.

Scanning can be done in both black and white form and colour.



Scanner

Output devices

The output devices are used to display the results and information.

The output devices are monitor, printer and speakers.



Monitor



Printer



Speakers

Storage devices

The special devices which are used to store data and instructions in a computer are called storage devices.

They are of two types – Internal storage devices and External storage devices.

They can be compared to the memory of a human brain. External hard disk, CD (Compact Disk), DVD (Digital Versatile Disk), and USB pen drives are some examples of external storage devices.



The computer has some memory acting as internal storage device apart from internal hard disk.



CD



External hard disk



DVD



Pen drive



Tech corner

Blu-ray disk (BD) is the latest storage device capable of storing Ultra-High Definition (UHD) videos.

Software

A software is a set of instructions given to the computer to do a particular task. Examples are Notepad, MS Paint, Tux Paint, etc.

Types of software

There are two types of software – System software and Application software.

System software

System software controls the overall functions of a computer. Operating system is an example of system software. This software helps the computer to function properly. Without system software, we cannot start or shut down a computer. Examples of the operating system software are: Windows 7, Windows 10, Mac OS, Linux and Unix.

Application software

Application software is used to do specific tasks on the computer. When the system software runs the computer smoothly, we need a software to do different kinds of work.



009

Examples of application software are:

- Word processors like Notepad, WordPad and MS Word.
- Drawing and graphic programs like MS Paint and Tux Paint.
- Video and messaging applications like Skype.

Input-Process-Output (IPO) cycle

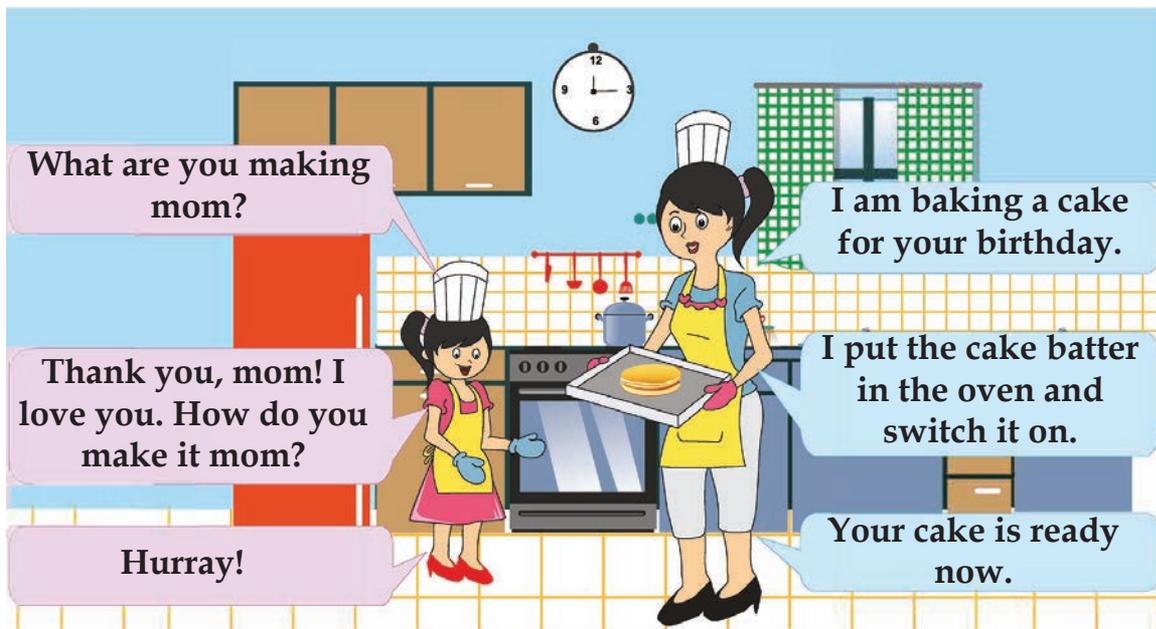
We have learnt about the computer system and the hardware and software that can be connected and used.

However, a computer cannot do any task on its own. We need to give data and instructions to make it work.

A computer works in three simple steps:

- **Input**
- **Process**
- **Output**

Let us try to understand the concept through an interesting example given below.



In the above example, we see that the cake batter is placed into the oven. After sometime, the cake gets ready.

This change is due to some process that happens in the oven.



Let us illustrate the steps that take place while baking a cake as shown below.



The cake batter is the **input**. Baking the batter in the oven is the **process** and cake is the **output**.

In the above example, the input has been processed to give us an output.

Most machines and computers work in the same way.

We give input to the computer to receive an output.

Example: Let us see the steps to add two numbers, 2 and 3.

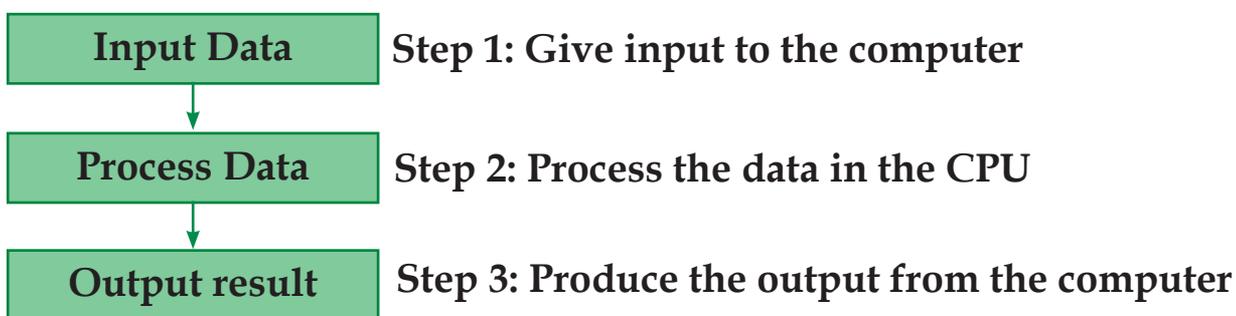
- Give the two numbers 2 and 3 as **inputs** using the keyboard.
- The **process** to be performed is addition.
- The **output** will be received as 5 in the monitor.

The computer takes input, processes it and produces output.

This cycle is called **Input-Process-Output** or **IPO** cycle.

The IPO cycle has three steps.

Let us observe the flowchart below:



Now, we have learnt the IPO cycle. But how can we give the inputs and receive the output?

For this purpose, we use the input and output devices. We already know about the input and output devices.

Let us revise

- A computer system is a complete, basic and functional computer.
- Hardware refers to the physical parts of a computer.
- A software is a set of instructions given to the computer to do a particular task.
- System software controls the overall functions of a computer.
- Operating system is an example of system software.
- Application software is used to do specific tasks on the computer.
- The computer actually takes input, processes it and produces output. This cycle is called Input–Process–Output or IPO cycle.
- The CPU processes the input as per given data and instructions, and gives out meaningful information.

Quick check

A. Fill in the blanks.

1. _____ refers to the physical parts of a computer.
2. The _____ can be compared to the memory of a human brain
3. A _____ is a digital camera connected to a computer to capture pictures and videos.
4. The _____ has three steps.

B. Match the steps to the correct statements.

1. Step 1

a. Produce output from the computer

2. Step 2

b. Give input to the computer

3. Step 3

c. Process data in the CPU

C. Tick the pictures which represent hardware.









D. State whether the given statements are True (T) or False (F).

1. CD is an external storage device.

2. Paint program is a system software.

3. A computer can do any task on its own.

4. The CPU processes the input as per given data and instructions.



Question time

A. Choose the correct answer.

1. This is NOT an input device.

a. Keyboard b. Monitor c. Mouse

2. This is an example of software.

a. Mouse b. Keyboard c. WordPad

3. Which of these statements is correct?

a. A computer needs only hardware to function.

b. A computer needs both hardware and software to function.

c. A computer needs only software to function.

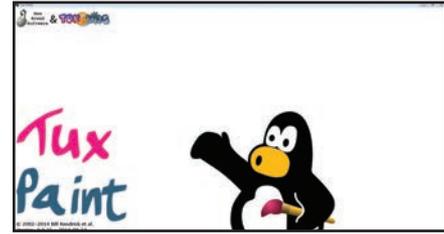
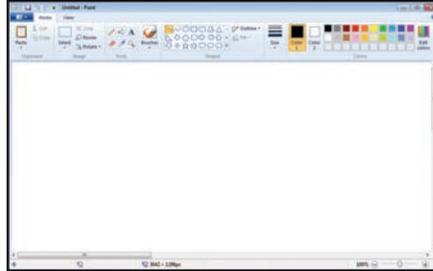
B. Answer the following questions.

1. What is a software?
2. What is a System software? Give an example.
3. What is an Application software? Give an example.
4. What is the main function of Operating system?
5. Define IPO cycle.
6. How does a computer produce output?

Activity corner



Given below are pictures of some software. Circle only System software.



Hands-on



Go to Accessories and note down the application software used in the school computer lab.

Think beyond



Neha's dad bought her a system and fixed the monitor, CPU, keyboard and mouse correctly. He installed Windows 7 and switched on the system to open MS Word. But he could not find it.

Which software need to be installed to work with MS Word?

Tips for teachers

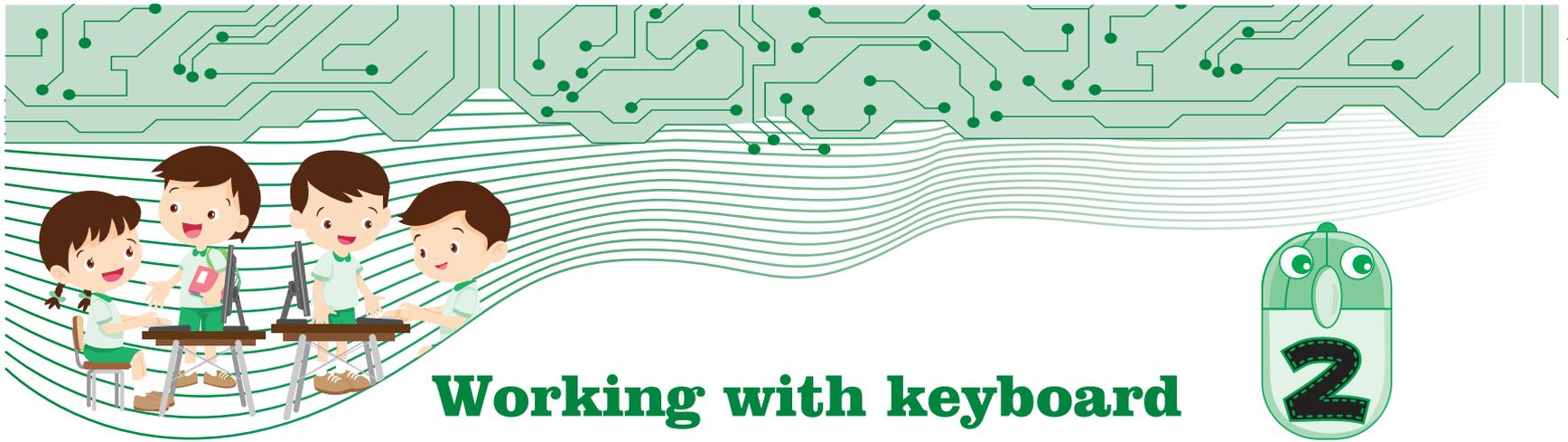


Start the lesson by comparing a computer with that of a human body. Show them pictures of some computer parts and ask them to name those parts. Make them analyse and categorise those parts into input or output devices. Explain the students that both hardware and software. Illustrate the importance of IPO cycle with a realtime example.

Refer more



<http://www.ictspecialist.com/notes.php>



Working with keyboard



The keyboard is an input device. When we type using the keyboard, it gives input to the computer. The buttons on the keyboard are called **keys**.

We shall learn about some other special keys. They are:

- Num Lock key
- Home key and End key
- Page Up key
- Page Down key
- Escape key
- Function keys

Num Lock key



We have learnt that number keys are found at two places on a keyboard.

The number keys placed on the right side of a keyboard are called the **numeric key pad** or **number pad**.

To type numbers using the number pad, press the **Num Lock** key. The light on the top right corner will glow.

We will now be able to type the numbers. The arrangement of the number keys on the number pad is like a calculator to enable faster typing.



Tech corner

The chorded keyboards are used by visually impaired people.

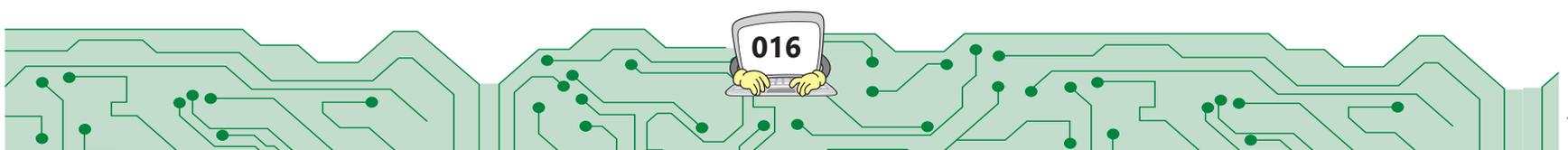


Home key and End key



The **Home** key and **End** key are other important keys. They are present on the right side of the keyboard.

When working on a document (e.g., Notepad or WordPad), pressing the **Home** key will move the cursor to the beginning of the line. Similarly, pressing the **End** key will move the cursor to the end of the line.



Page Up key and Page Down key



The Page Up key (**Pg Up**) is used to scroll up the page.

The Page Down key (**Pg Dn**) is used to scroll down the page.

Escape key



The Escape key is often shown as **Esc** key. It is found at the top left corner of the keyboard. When we press this key, any running program gets cancelled. In other words, this key is used to stop or cancel any command given to the computer.

Function keys



The function keys are at the top of the keyboard, from **F1** to **F12**.

These keys act as **shortcuts** and enable us to do several functions quickly.

For example, **F1** key is the **Help** key. When we press the **F1** key in any program, we see the **Help** menu for the opened program.

Some common function keys and their functions are:

F1 - Opens Help menu.

F2 - Renames files or folders.

F3 - Searches for files or programs.



Tech facts

The Spacebar key is the most frequently pressed key on the keyboard.



Finger tips



The function keys can also be combined with control keys to do specific functions. Clicking ALT + F4 keys together will close the program.

Let us revise



- The number keys placed on the right side of a keyboard are called the numeric key pad or number pad.
- The Page Up key can sometimes be seen as PgUp.
- When working on a document (e.g., Notepad or WordPad), pressing the Home key will move the cursor to the beginning of the line and pressing the End key will move the cursor to the end of the line.
- The Page Up key is used to scroll up and the Page Down key is used to scroll down a page.
- When we press the Esc key, any running program gets cancelled.
- The function keys are at the top of the keyboard, from F1 to F12. These keys act as shortcuts.

Quick check



A. Fill in the blanks.

1. The number keys placed on the right side of a keyboard are called _____ .
2. Pressing the _____ key renames files or folders.
3. The _____ key is the most frequently pressed key on the keyboard.
4. When we press the _____ key any running program gets cancelled.

B. Match the key with its function.

- | | | |
|----|---|---------------------|
| 1. |  | a. Scroll down |
| 2. |  | b. Help |
| 3. |  | c. Scroll up |
| 4. |  | d. Cancel a program |

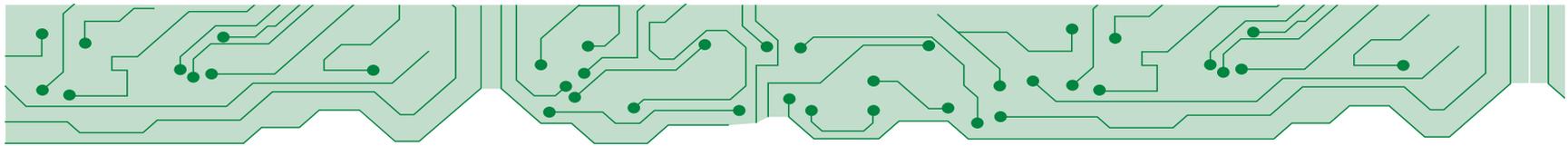
C. State whether the given statements are True (T) or False (F).

- The Home key moves the cursor to the beginning of the line.
- The Function keys act as shortcuts.
- The number pad can only be used when the Num Lock key is on.
- The Escape key is the longest key on the keyboard.

Question time

A. Choose the correct answer.

- This key is present at the top left corner of the keyboard.
 - Escape
 - Delete
 - Page Up
- This key is used to scroll down a page.
 - Page Up
 - Page Down
 - Backspace



3. When we press this key, the cursor moves to the end of the line.

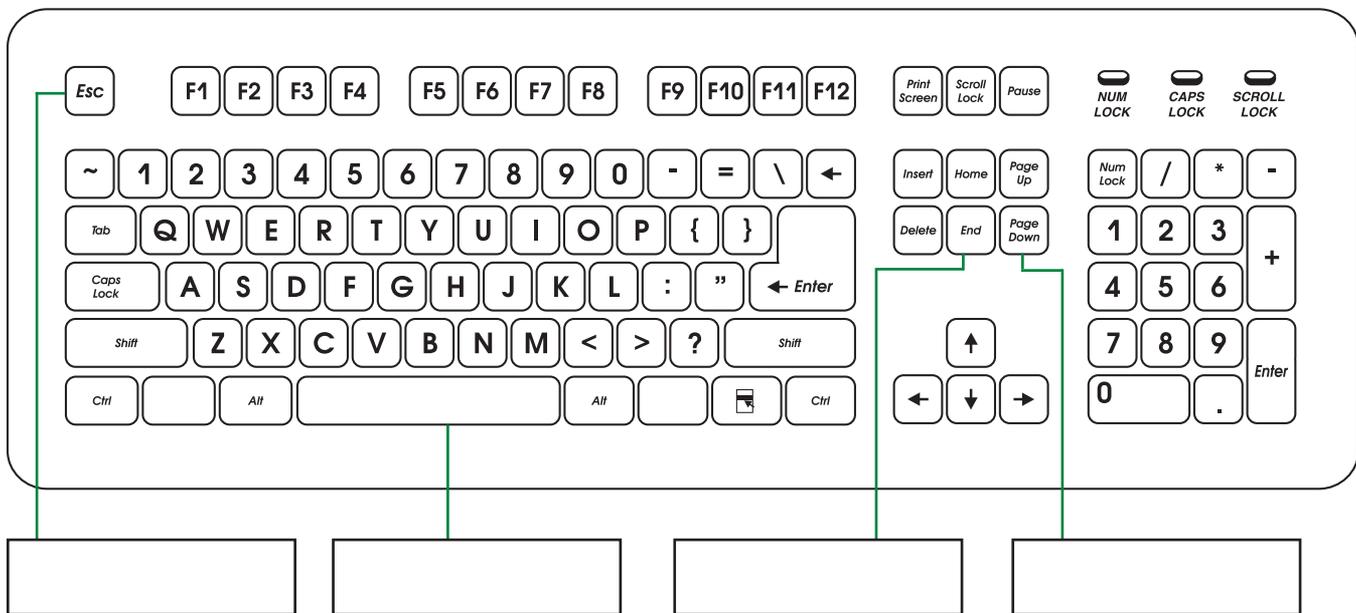
- a. Enter b. Home c. End

B. Answer the following questions.

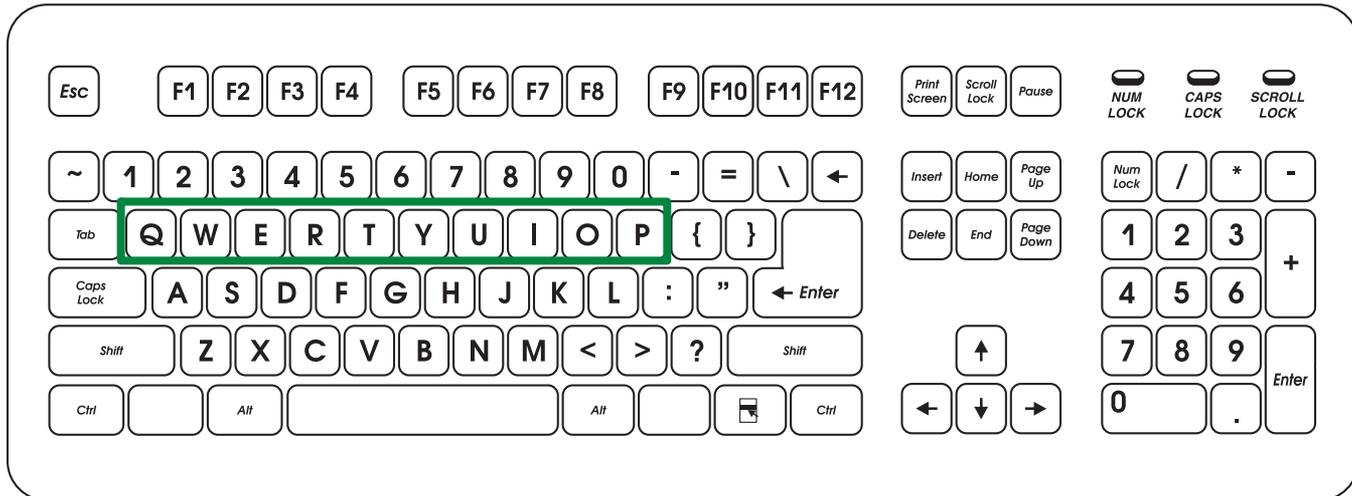
1. What is a keyboard?
2. Where are the number keys located on a keyboard?
3. What is the function of a Home key?
4. Where is the Num Lock key located on a keyboard?
5. What are function keys? Give an example of a function key.

Activity corner 

A. Label the keys in the diagram given below.



B. Look at the picture of the keyboard given below. Which is the longest word that can be made using only the top row of the keyboard?



Hands-on

Press all the function keys from F1 to F12 and note down the functions performed by each one of them.

Tips for teachers

Take the students to the lab and recap on the keys already learnt by them. Demonstrate the function of each key. Encourage each student to try the operations. This would sound more interesting. Open typing master and ask the students to practise their typing skills.

Refer more

<http://www.typingtest.com>

<https://www.computerhope.com/issues/ch000306.htm>